Intelliviz - An Intelligent Telemetry Data Visualization Assistant, Phase II

Completed Technology Project (2009 - 2011)

Project Introduction

Future space programs will require extensive monitoring of complex, highly instrumented systems such as the Orion spacecraft and lunar/Martian habitats. To handle tasks and situations that cannot be fully delegated to automation software, future flight controllers and crew must be able to monitor, review and interpret voluminous and complex telemetry data quickly to maintain necessary levels of situations awareness and make critical decisions rapidly and accurately. We propose to develop Intelliviz, an intelligent telemetry data visualization assistant for NASA. This software system will create data visualizations automatically to reduce the effort and difficulty of specifying and constructing effective telemetry data visualizations. Intelliviz will determine the user's data analysis goals by enabling users to express their data analysis goals directly and by posing system diagnosis or system management questions or problems from which analysis goals can be inferred. Intelliviz will then generate appropriate displays that support the user's data analysis goals by retrieving the relevant telemetry and systems data, selecting appropriate data display methods, and instantiating and configuring those displays. During the prior Phase 1 SBIR project, we reviewed research literature describing prior work in automated visualization design, reviewed related NASA R&D programs, specified scenarios and test cases, identified promising early applications for Intelliviz, refined our requirements and design, implemented a software prototype that demonstrates Intelliviz capabilities, and developed a plan to create an operational prototype during Phase 2. During the phase 2 project proposed in this document, we will develop a technology readiness level 6 operational prototype of Intelliviz to demonstrate its feasibility, utility, and usability by a NASA-relevant user community and task area.

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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Ames Research Center (ARC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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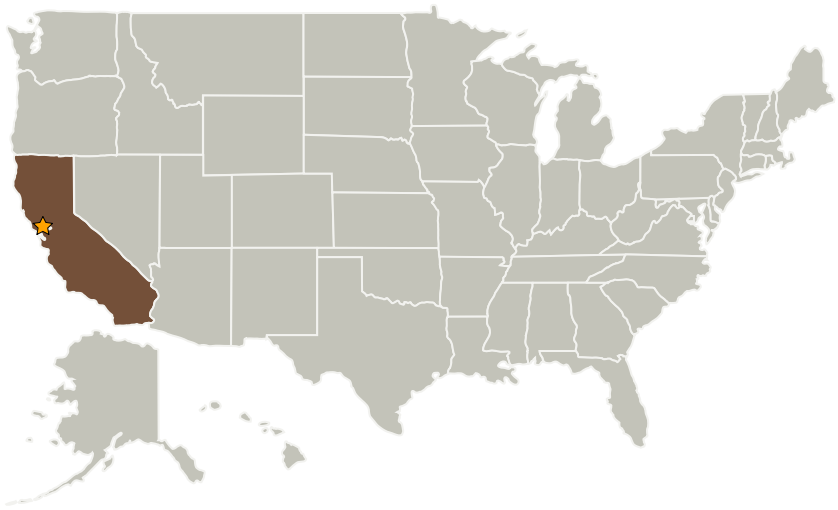
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
★Ames Research Center(ARC)	Lead Organization	NASA Center	Moffett Field, California
Stottler Henke Associates, Inc.	Supporting Organization	Industry	San Mateo, California

Primary U.S. Work Locations
California

Project Transitions

February 2009: Project Start

August 2011: Closed out

Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX11 Software, Modeling, Simulation, and Information Processing
  - TX11.4 Information Processing
    - TX11.4.2 Intelligent Data Understanding